

CHAPTER IV

Information Technology Audit of Works and Accounts Management Information System (WAMIS)

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WORKS DEPARTMENT

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4.1 Introduction

Government of Odisha (GoO) implemented the Works and Accounts Management Information System (WAMIS), a workflow automation system in nine⁷⁵ engineering departments including Odisha Works Department to bring about efficiency and effectiveness in the functioning of these departments. The Rural Development (RD) Department, GoO is the nodal agency to facilitate implementation and maintenance of WAMIS. The work of development of WAMIS software was awarded to Centre for Development of Advanced Computing (CDAC), Pune in May 2009 for ₹70 lakh to be completed within 12 months. The scope of the work in agreement provided for system study, billing, accounts management system, budget management system, works management system and integration with the office of Accountant General, IT system. However, due to addition of eight more features (Serial Number 6 to 13 in **Table 4.1**), WAMIS could be implemented only in April 2014 with a delay of more than three years. The main features and objectives of WAMIS include (i) automation of technical functions and preparation of accounts (ii) preparation of budget estimates (iii) allotment of funds and (iv) creation of work information along with capturing of contract award details.

WAMIS has been developed as a web based application developed using JAVA in the front end and MySQL database at the back end. Servers for the database and application are installed at the State Data Centre, Bhubaneswar. WAMIS contains 13 modules, out of which seven modules were used by the Works Department (as of April 2023) as detailed below:

Table 4.1: Details of Modules available in WAMIS and utilisation status of Works Department

Sl. No.	Modules	Modules available	Utilised by Works Department
1	Accounts	✓	✓
2	Works	✓	✓
3	Billing	✓	✓
4	Mobile App for uploading geo-tagged photographs	✓	✗

⁷⁵ i) Rural Development Department, ii) Rural Water Supply and Sanitation Divisions of Panchayat Raj & Drinking Water Department, iii) Works Department, iv) Water Resources Department, v) Public Health Divisions of Housing & Urban Development Department, vi) Commerce & Transport Department, vii) Forest Environment and Climate Change Department, viii) Energy Department and ix) Odisha Mining Corporation.

Sl. No.	Modules	Modules available	Utilised by Works Department
5	Budget (Work wise allotment)	✓	✗
6	Employee based registration with messaging services	✓	✓
7	e-Estimates with analysis of rate	✓	✗
8	Process based Administrative Approval	✓	✗
9	Process based Technical Sanction	✓	✗
10	e-Tendering	✓	✗
11	e-Measurement Book (e-MB)	✓	✓
12	Process based Deviation	✓	✓
13	Process based Extension of Time (EoT)	✓	✓

Source: Information provided by Nodal Department

An expenditure of ₹7.42 crore was incurred on the development of the software, maintenance and training cost for WAMIS as of March 2023 by the Rural Development (RD) Department, Government of Odisha.

4.1.1 Organizational structure

The Principal Secretary to Government, Rural Development Department (RD Department) is the nodal authority to oversee the development of WAMIS in RD Department as well as other engineering departments discussed above. The Principal Secretary to Government, Works Department was required to monitor the implementation of WAMIS under the scope of e-Governance and digitisation⁷⁶ of the Works Department. The field formation of the Works Department in the State consists of two Engineer-in-Chiefs (EIC), six Chief Engineers (CE), 20 Chief Construction Engineers (CCE) responsible for the administration and control of public works of the Department within their circles, apart from 82 Superintending Engineers (SE) at the Divisional level, who are heads of administrative units of the Department. Further, a WAMIS Committee was constituted in August 2019 comprising of representatives of all nine user departments to monitor its implementation and suggest improvements to be made in the application.

4.1.2 Audit Objectives and Criteria

The objectives of audit were to assess whether:

- (1) planning and implementation of all modules of the WAMIS application met the objectives of work automation in the field offices of the State;
- (2) adequate IT controls existed to ensure data integrity, data security and data accuracy; and
- (3) appropriate monitoring and internal control mechanism were in place at all levels to monitor the implementation.

⁷⁶ As per the Mission Mode Plan (MMP) lunched in 2015

The Audit criteria is sourced from the following:

- User Requirement Specifications (URS) and Software Requirement Specifications (SRS), user WAMIS manuals, service level agreements (SLAs), request for proposals (RFP);
- IT Act, 2000 and subsequent amendments;
- National e-Governance policies and standards;
- Central Public Works Department (CPWD) Code;
- Orissa Public Works Department (OPWD) Code;
- Odisha Budget Manual;
- State Schedule of Rates (SoR) and Analysis of Rates (AoR);
- Work agreements; and
- Circulars, instructions, standard operating procedures issued by GoO for implementation of WAMIS from time to time.

4.1.3 Audit Scope and Methodology

The IT Audit of WAMIS was conducted to assess whether all the modules available were implemented in the Works Department. The audit was carried out from June to November 2023 covering a period of five years from 2018-2019 to 2022-2023. Out of 82, 12 divisions⁷⁷ (15 *per cent*) were selected⁷⁸ for examination of records relating to implementation of WAMIS as per stratified random sampling. To ensure correctness of workflow through WAMIS, during field visits, 565 works were selected for test check in 12 selected divisions by stratified random sampling method. An Entry Conference was held (May 2023), with the Principal Secretary to Government, Works Department and Principal Secretary to Government, RD Department where the audit objectives, criteria, scope and methodology were discussed.

Audit methodology involved examination of records relating to WAMIS at Offices of Principal Secretary to the Government of Odisha, Works Department, EIC (Civil), two CEs⁷⁹ and three CCEs⁸⁰. Since, the RD Department was the nodal office for implementation of WAMIS in the State including Works Department, records at the Office of Principal Secretary to RD Department, EIC/Rural Works and Superintending Engineer (SE), Rural Works Division-I, Bhubaneswar were also verified.

⁷⁷ Roads and Building Divisions: i) Angul; ii) Balangir; iii) Bhubaneswar No. IV; iv) Dhenkanal; v) Jharsuguda; vi) Keonjhar; vii) Sambalpur No. I; viii) Sambalpur No. II ix) Sonapur; x) Sundargarh; xi) National Highway Division Cuttack and xii) Quality Control (R&B) Division Cuttack

⁷⁸ High risk (5), Medium risk (4) and low risk (3)

⁷⁹ CEs: i) DPI & Roads and ii) Buildings

⁸⁰ CCEs: i) Central R&B Circle, Bhubaneswar ii) R&B Circle, Dhenkanal and iii) R&B Circle, Keonjhar

Dump data of WAMIS and login credentials to view and generate the reports were also obtained to carry out data analysis using CAATs⁸¹. The exact names of tables and columns as in the system database have not been used in the body of the report, in view of system security.

An Exit Conference was held on 28 June 2024 and the responses of the Government have been considered and suitably incorporated in the report.

This audit report contains audit findings under different areas such as Planning and Implementation of WAMIS, User Management, Data Security, Application controls implemented in Modules such as Budget, e-Estimates, Works and Bills, and Monitoring and Internal Control Mechanism for WAMIS.

4.2 Planning and implementation of WAMIS

4.2.1 Implementation of modules of WAMIS

The 13 modules of WAMIS were implemented by RD Department (Nodal department) between November 2009 and August 2022 to undertake process-based workflow automation.

The RD Department had made it mandatory to use all modules since April 2022. However, analysis of WAMIS database and information furnished by CDAC Cell, Bhubaneswar revealed that despite the availability of 13 modules in WAMIS, Works Department had utilised only seven⁸² modules. The details of the modules of WAMIS not used in the Works Department despite availability are tabulated in **Table 4.2**.

Table 4.2: Details of modules not used in the Works Department

Sl. No.	Module	Date of Go live of Modules	Delay in use by Works Department from Go-live of modules
1	Budget Module work wise allotment purpose	April 2015	8 years and 7 months
2	Mobile App for uploading geo tagged Photographs	September 2013	10 years and 2 months
3	Process based Technical Sanction	November 2020	3 years
4	Process Based Administrative Approval	July 2019	4 years and 4 months
5	e-Tendering Module - WAMIS share pre tender data to GEPNIC and fetch post tender data after AOC from GEPNIC	August 2020	3 years and 3 months
6	e-Estimate with Analysis of Rate	January 2021	2 years & 10 months

Source: WAMIS database and information provided by RD Department

⁸¹ Computer Assisted Audit Techniques (CAATs) like Excel / International Data Encryption Algorithm (IDEA) / Structural Query Language (SQL)

⁸² (i) Employee registration (ii) Works (iii) e-MB (iv) Processed based deviation (v) Processed based extension of time (vi) Billing and (vii) Accounts

Audit noticed that there was inadequate training to users of Works Department by CDAC and shortage of manpower at field level as discussed in *paragraphs 4.2.9* and *4.2.10*, due to which the field units of the Works Department could not implement all the modules of WAMIS. The impact of non-implementation / delay in implementation of such modules of WAMIS by Works Department are discussed in *paragraphs 4.3* to *4.7*.

The Works Department stated (March 2024) that action will be taken to use all the modules of WAMIS. However, no time frame for such implementation was specified.

4.2.2 Non-inclusion of executive instructions regarding use of WAMIS, in the OPWD Code

Relevant provisions from circulars, notifications and executive instructions issued from time to time by the Works Department, are incorporated into the OPWD Code periodically. Executive instructions related to the use of other systems such as e-Procurement and the Contractor Database Management System (CDMS) had also been incorporated into the OPWD Code. However, Audit noted that executive instructions related to the use of WAMIS by the Works Department had not been incorporated into the OPWD Code, even after nine years of its implementation as of March 2024.

In the absence of formal provisions governing the use of WAMIS in the OPWD Code, the field units of Works Department did not implement all modules of WAMIS and continued previous practice of manual form.

The Works Department stated (June 2024) that once all the modules of WAMIS are implemented, it will be considered for inclusion in the OPWD Code.

The reply was not tenable as the Department had not incorporated provisions in the OPWD Code for even those functionalities of WAMIS that had already been notified as mandatory through executive instructions.

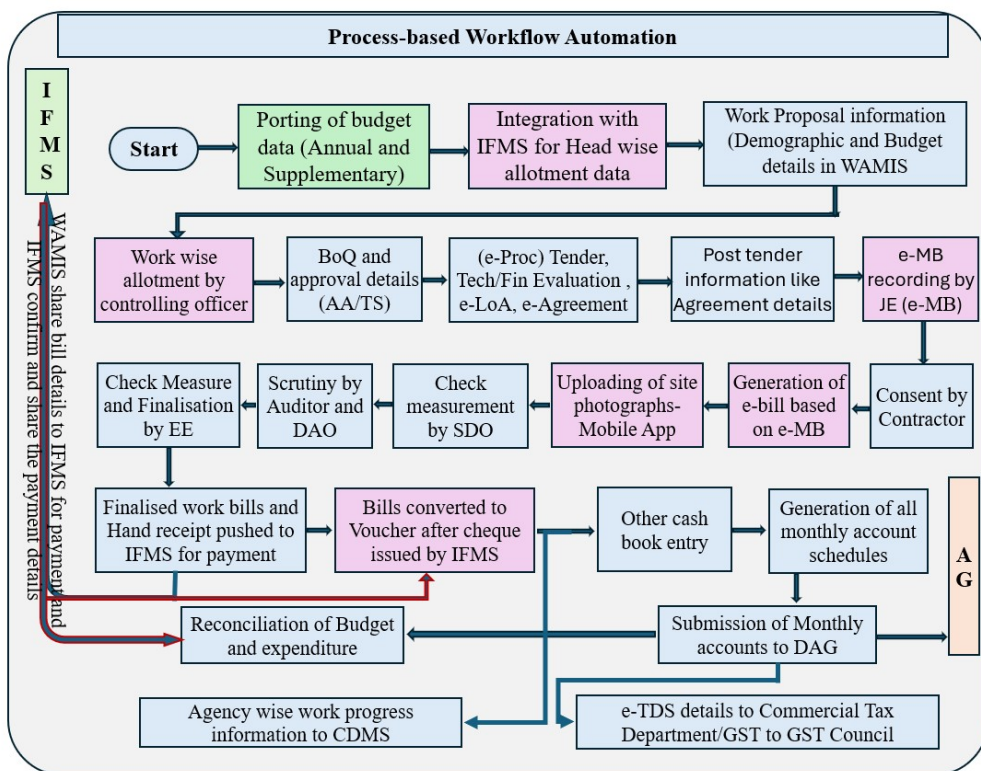
4.2.3 Bypassing WAMIS

WAMIS was developed to cover the entire life cycle of a typical construction project and automate the activities performed at the divisional offices such as (i) capturing of data on work information, ii) Administrative Approval (AA), iii) Technical Sanction (TS), iv) Preparation of estimates, v) Bill of quantities (BoQ), and vi) award of contract. Besides, the system has provisions for e-Measurement Books (e-MBs) and generation of e-Bills for payment through IFMS⁸³. After passing of bills by the Divisional Officers, details such as bill number, bill type, gross amount, net amount, head of account and beneficiary details were passed to IFMS for generation of Cheques and triggering payments to contractors.

⁸³ Integrated Financial Management System is a software being managed by Directorate of Treasuries and Inspection for preparation of budget estimates and allocation, surrender, re-appropriation of fund across the State.

After payment through IFMS, vouchers are generated in WAMIS for preparation and submission of monthly accounts to the AG(A&E), Odisha in the form of various accounting reports like statement of monthly work-wise expenditure (in 'Form 64') and the statement of monthly deposit works (in 'Form 65'), statement of monthly cheques generated, classified abstract of expenditure, schedule of credits/debits to miscellaneous heads of accounts, schedule of credit/debit to remittances, schedule of deposits etc. The workflow process involved in operation of WAMIS is depicted in **Chart 4.1**:

Chart 4.1: Processed based Work Flow Automation in WAMIS



Source: As per WAMIS Manual

Audit analysed the intended workflow *vis-à-vis* the actual workflow implemented in WAMIS, and noticed that although WAMIS had functionalities to cover the above processes, the Department had bypassed the intended workflow, resulting in the risks outlined below:

Table 4.3: Details of processes bypassed in WAMIS by Works Department

Sl. No.	Name of the functionalities bypassed	Risk
1.	e-Estimates	Though e-Estimates module was available in WAMIS, the Works Department had not used the same. As a result, the detailed Bill of Quantities (BoQ) could not flow from the e-Estimates stage to the tender stage and subsequently to the payment stage with facility of workflow automation. The divisions were entering BoQ manually in WAMIS. The system was not able to facilitate monitoring of changes to BoQ during execution of works.

Sl. No.	Name of the functionalities bypassed	Risk
2.	Administrative Approval and Technical Sanction details	Compliance with the procedure of obtaining administrative approval and technical sanction was not made mandatory in WAMIS, and the responsibility remained with the individual users.
3.	e-Measurement Book (e-MB)	Though there was provision of e-Measurement of works in WAMIS, the Works Department had not implemented it for workflow automation and continued to use manual measurement. There were significant risks of errors and omissions in entering details of bills on an abstract basis, instead of recording detailed measurements of works executed and computing the bill amounts through the system.
4.	Deviation process	The process of obtaining approval for deviations was not being done through the WAMIS system. Instead, after obtaining approval for deviation manually (offline), this information was being entered by users into WAMIS. The responsibility of ensuring compliance remained on the users instead of the system.
5.	Extension of Time (EoT) process	Though WAMIS has provision for process-based sanction of EoT, Works Department had not made it mandatory for implementation by field units. Thus, effective monitoring of physical progress of works through WAMIS was not possible.
6.	Uploading of geo-tagged photographs	Though WAMIS has provision for uploading geo-tagged photographs before passing bills, Works Department did not use the module for uploading geo-tagged photographs of works. Thus, effective monitoring of physical progress of works through WAMIS was not undertaken.

- Audit further observed that the Works Department neither issued orders for complete automation of accounting process through WAMIS nor had it implemented all the modules of WAMIS in 102 field offices⁸⁴. Further, there was no detailed documentation fixing roles and responsibilities for the smooth implementation of various modules of WAMIS.
- Audit also noticed discrepancies in the number of agreements between WAMIS data and that of manual registers in 12 test checked divisions.

In the 12 test checked Divisions, there were 60,621 agreements as per WAMIS, whereas the manual registers recorded 59,114 agreements during 2018-2023. There was a difference of 1,507 agreements between WAMIS and manual registers data.

⁸⁴ 82 Public Works Divisions and 20 Circle Offices

Table 4.4 : Statement showing difference in the number of agreements between WAMIS data and manual registers

Year	No. of agreements		
	No. of agreements as per WAMIS data	No. of agreements as per Divisional Records	Excess (+) / Shortage (-) in WAMIS data
2018-19	13,240	12,213	1,027
2019-20	11,017	10,250	767
2020-21	12,181	11,271	910
2021-22	11,677	10,426	1,251
2022-23	12,506	14,954	(-)2,448
Total	60,621	59,114	1,507

Source: Information collected from Test Check divisions and extracted from Database

The excess agreements in WAMIS were due to creation of multiple IDs for the same works by the Divisions and the shortage of agreements in WAMIS (in 2022-23) was due to non-entry of agreements in database. This indicated that the work was being done in manual form and then being entered into the system defeating the objective of automation. Further, data being entered into the system was also not being verified to deal with such discrepancies.

While accepting audit comments, the Works Department stated (June 2024) that there was provision to bypass the system, as WAMIS has not been introduced in all the user departments in one go, rather, the departments are adopting WAMIS and its different modules in different phases. To facilitate new users, such skipping of process has been permitted.

The fact, however, remained that Works Department had not adopted all the modules available in different phases, consequently, the intended benefits of workflow automation by implementing WAMIS had not yet accrued fully to the Department. The responsibility of ensuring compliance and mitigating the risk of error/ fraud was still borne by the individual users, rather than having shifted to system.

Above also indicated that as all the modules had not been made mandatory, there was a risk that the data recorded in the system may not be complete, and that incorrect data entries have been made by users. Audit findings in this regard are as follows:

- **Incorrect entry of date of commencement:** As per OPWD code, any commencement of work would only be after issue of formal work order by the competent authority. In this context, Audit analysed the contract management table in WAMIS as of March 2023 and found that in contravention of the above, out of 3.20 lakh agreements of Works Department, there were 7,427 agreements where the date of commencement of work was 15 days beyond the stipulated date of work order. Owing to incorrect data entries relating to the date of commencement of work, the system indicated the delay ranging between 1 and 7,290 days beyond the stipulated period of commencement. This includes 108 works where the delay was more than one year. Sample of such few cases are given in **Table 4.5:**

Table 4.5: Sample of works where date of commencement were wrongly entered

Sl No	Division/ Agreement No	Work Order Date	Date of Commence- ment	Expected date of Completion	Deficiency in Data entered
1	NH Division, Cuttack/ 57F2	04.01.2000	06.04.2017	05.06.2017	Date o commencement and completion were before date of work order.
2	NH Division, Cuttack/ 79F2	06.01.2000	06.04.2017	05.06.2017	-do-
3	R&B Division, Bhanjanagar/ 119p1/2017-18	18.08.2017	11.09.2047	10.03.2048	Date of commencement and Completion were more than 30 years from the date of work order.
4	R&B Division, Khariar/ 832-P1- 2014-15	30.01.2015	19.03.2020	18.12.2020	Date of commencement and Completion were more than five years from the date of work order.
5	R&B Division, Koraput / S.E.No.679/18-19	15.12.2018	15.12.2038	14.01.2039	Date of commencement and Completion were more than twenty years from the date of work order.

Source: Extracted from WAMIS data

It was noted that the above data discrepancies occurred due to manual entry of data by junior engineers without input validation and these entries had not been properly checked by the Divisional Accountants and Divisional Officers. Entry of wrong data rendered the database inconsistent.

In reply, Works Department stated (June 2024) that the field divisions were being instructed to reconcile the discrepancies between agreement registers and WAMIS.

4.2.4 Deficiency in change management

As per the agreement (May 2009) between GoO and CDAC, the RD Department would give in writing the proposed changes, if any, to CDAC, for incorporation in WAMIS. CDAC would respond within the time specified in the proposal. Changes proposed by user departments would require to be approved by RD Department. The WAMIS Committee was to monitor its implementation and suggest improvements to be made in the application.

Audit noticed that there was no formal, documented change management policy⁸⁵ for WAMIS. While CDAC had submitted (December 2018) a Standard Operating Procedure (SOP) for change control management which provided a complete step-by-step process for initiation and implementation of any change in WAMIS, the same was not approved (November 2023) by GoO

⁸⁵ Change management policy is an IT practice designed to minimize disruptions to IT services while making changes to critical systems and services. A change is adding, modifying, or removing anything that could have a direct or indirect effect on services

(RD Department). The reasons for non-approval were not on record. In a meeting of RD Department and Works Department with CDAC held on 27 September 2020, 29 proposals for changes in WAMIS were given by the Works Department. Out of these 29 proposals, six proposals were yet to be incorporated by CDAC (March 23) as follows:

Table 4.6: Statement showing Proposal for change management request by Works Department, which were yet to be incorporated and risks thereof

Sl. No.	Proposal for change Management	Risk
1.	Comprehensive measurement ⁸⁶	Lack of control over final measurement before final payment to the contractor after considering graph sheet, level book <i>etc.</i> , which raised risk of over payment to the contractor.
2	Provision for pre-measurement, overall measurement and minus quantities in overall measurement.	Lack of assessment of actual material quantity brought to the work site (stack measurement) for billing resulting in risk of over payment to the contractor.
3.	Provision for stack measurement and void calculation	
4.	Provision of issue of e-MB for multiple work under one agreement	Lack of detailed entries for measurement of executed works in case of composite tenders where multiple works are executed, resulting in risk of errors and omissions in preparing bills on abstract basis.
5.	One work assigned to multiple JEs	Lack of provision for managing complex works.
6.	Measurement in Engineering, Procurement and Construction (EPC) contracts	Lack of provision in WAMIS for measurement of work in case of EPC contracts.

Source: Documents of Works Department

Non-approval of SOP for change control management by RD Department coupled with non-conduct of regular meetings by WAMIS Committee (discussed in detail in *paragraph 4.1*) even after a lapse of five years had a cascading effect on the implementation of modules in WAMIS by the Works Department.

RD Department stated (May 2024) that changes are being made after obtaining requirements and detailed discussion with requesting authorities, domain experts and affected stakeholders. All the 29 proposals of Works Department have been incorporated in WAMIS, which was also confirmed (June 2024) by Works Department.

However, Audit did not find any evidence to support the deployment of the six changes requested for by the Works Department listed in **Table 4.6**. As such, the fact remained that the benefits from implementing the identified changes

⁸⁶ The measurement for level section measurement of earth work through graph sheet, use of steel in cement concrete reinforcement works

could not be realised and the residual risks due to their non-implementation remained.

4.2.5 Incomplete customisation of WAMIS

As per the agreement (May 2009), CDAC was required to prepare the SRS and URS by conducting a detailed study of workflow in the functional branches of RD Department. It was seen that CDAC developed WAMIS, by customising its software developed for Maharashtra, Tripura, Punjab and Goa Public Works Department. While the SRS and URS were prepared in July 2009 by CDAC, the formal approval of SRS and URS by GoO was not on record.

Further, while WAMIS was implemented in the Works Department from April 2014, Audit observed that some of the provisions of OPWD and Central Public Works Accounts (CPWA) Codes were not incorporated to cover all the functions, as follows:

Table 4.7: Provisions of OPWD and CPWA Codes not incorporated in WAMIS

Sl. No.	Provisions of OPWD and CPWA Code	Risk
1.	Date of acceptance of tender	To ensure that the works are commencing within 15 days of acceptance of the tender.
2.	Date of refund of EMD/ ISD/ BG	To ensure that the defect liability period of the contract has been completed before issuing refund.
3.	Issue of mobilization advance and its interest thereon as per OPWD	To ensure calculation of interest as per OPWD code from the date of issue of advance.
4.	E-signature of bills	To ensure fixing of responsibility for payment to the wrong/ineligible persons.

Source: Database analysis of WAMIS data

In the absence of functionalities as above, Works Department had to seek additional features and integration with other existing applications like e-Procurement, Contractor Management System, IFMS, Voucher Level Computerisation *etc.*, through change management continuously. Thus, implementation of WAMIS is not yet complete.

The Works Department stated (June 2024) that efforts are being made to ensure compliance of WAMIS, OPWD and CPWA Code.

The reply was not tenable, since these customisations were required right from inception and have still not been implemented after years of adoption of WAMIS. The Department has also not clearly defined timelines by which these changes will be implemented.

4.2.6 Absence of business continuity plan

Paragraph 9(11) of Schedule II of Information Technology (IT) Act, 2000, envisaged that a business continuity plan (BCP) should be prepared and tested on an annual basis as a part of best practices. Paragraph 4.1(9) of the above Rule also stipulated that any facility that supports mission-critical and sensitive applications must be located and designed for repairability, relocation and reconfiguration.

Audit observed (June 2023) that neither the RD Department nor the Works Department had framed any documented Business Continuity Plan (BCP)/ Disaster Recovery Plan (DRP) for WAMIS and the system was running without these even after nine years of its implementation (April 2014) despite the fact that it is a critical mission system. Thus, WAMIS continues to have significant exposure to risks arising from natural or man-made disasters. In the absence of contingency planning, the Department would not be in a position to retrieve critical Government processes and procedures. Audit noticed that the storage of data and application of WAMIS backups were being kept in the same data center where the application was hosted.

The RD Department stated (May 2024) that the application and database are hosted in the SDC cloud and application and database backups were being taken regularly. Further, Deputy System Manager, Odisha Computer Application Centre stated (July 2024) that process has been initiated to have a cloud enabled data centre in a different seismic zone to fulfil the requirements of DRP and BCP for all critical e-Governance applications of the State.

The reply indicated that the Government had assumed the risk of running such a critical application without a formal and documented BCP and DRP.

4.2.7 Integration of modules with WAMIS

GoO had decided between July 2016 and September 2022 to integrate the e-Procurement (GePNIC), CM's dashboard, DMF (District Mineral Fund) portal, Nirman Shramik⁸⁷ portal, e-Nirman⁸⁸, Contractors Database Management System (CDMS)⁸⁹, Integrated Finance Management System (IFMS), Voucher Level Computerisation (VLC), with WAMIS so that all information like contractors' data, tender details, collection of royalty on use of minor minerals, deposit of labour Cess and progress of works (both physical and financial), could be easily accessible in a single user-friendly dashboard, for monitoring and taking decisions. However, as of March 2023, out of the above eight applications, five applications were not integrated with WAMIS as envisaged, and process of integration is still in pipeline. The

⁸⁷ The objective of the scheme is to extend financial assistance to eligible building and other construction workers for continuing education of their wards/children under the "Nirman Shramik Kalyan Yojana" being extended by the Odisha Building and Other Construction Workers Welfare Board

⁸⁸ Web based e-Nirman Project Monitoring System to monitor physical and financial status of all the projects running under the PWD Department, Govt. of Odisha, throughout the State

⁸⁹ Database developed by works Department containing details of the Contractors

details of non-integrated applications with WAMIS are tabulated in **Table 4.8** below:

Table 4.8 : Applications which are not yet integrated with WAMIS

Sl. No.	Application	Objectives	Risks which remained due to non-integration
1	Integration with GePNIC (e-Procurement)	To avoid human intervention, and to bring transparency in procurement, GoO decided between July 2016 and February 2021 to implement an end-to-end integration of e-Procurement system and WAMIS so that the inputs like BoQ details can be taken from e-Procurement to WAMIS and the information on tender related data available with the e-Procurement system like contractor details, BoQ details, timelines, contracts awarded <i>etc.</i> ; can be fetched automatically in WAMIS.	Since the integration with e-Procurement System (GePNIC ⁹⁰) has not been completed as of March 2023, the risk of unauthorised changes exists in the approved BoQ while recording of contract details separately in the work to be executed on WAMIS. Errors in entering details of timelines for completion of work. Thus, contractual clauses related to penalties could be incorrectly mapped.
2	Integration with DMF portal	GoO decided (December 2021) to integrate the WAMIS with DMF portal for both monitoring and accounting of projects and collection of dues towards DMF.	Collection of dues towards DMF funds on royalties on minor minerals from contractors' bills could not be monitored.
3	Integration with CM's Dashboard	GoO decided (July 2022) that CM's Dashboard - a tool to generate various analytical reports to help senior officials in identifying gaps in service delivery and to take corrective measures should be integrated with WAMIS to make the dashboard citizen centric and to allow progress of major projects to be seen by all .	Details of projects taken up by the Works Department, progress of these projects and gaps in service delivery could not be viewed defeating the purpose of this integration.
4	Integration with Nirman Shramik portal with WAMIS	GoO decided (September 2022) to integrate Nirman Shramik portal of the board ⁹¹ with WAMIS for online transfer of Labour Cess collected in execution of different works.	WAMIS was not integrated with Nirman Shramik as envisaged despite the lapse of one year and the objective of online monitoring of Cess collection. As a result, there was a risk that the laborers' benefits would not be realised in time in case of any workplace accidents.
5	Integration with e-Nirman	GoO decided (April 2022) to integrate e-Nirman ⁹² with WAMIS to monitor the physical and financial progress of works, where the name of the work, Agency, Agreement Number and	WAMIS was not integrated with e-Nirman despite lapses of one and half years and the objective of online monitoring of physical and financial progress of works remained unachieved.

⁹⁰ Government e-Procurement System by National Informatics Centre (GePNIC)

⁹¹ Odisha Building and Other Construction Workers' Welfare Board

⁹² Web based e-Nirman Project Monitoring System to monitor physical & financial status of all the projects running under the PWD Department, Govt. of Odisha, throughout the State.

Sl. No.	Application	Objectives	Risks which remained due to non-integration
		amount, Contract Period, date of commencement, date of completion, whether EoT sanctioned <i>etc.</i> ,’ could be updated in e-Nirman from WAMIS for monitoring.	

The RD Department stated (May 2024) that integration of WAMIS has been done with Nirman Shramik, CDMS, IFMS, DMF, and e-Procurement and CM’s dashboard portal and the Works Department, GoO also reiterated (June 2024) the same.

The reply was not tenable, since there was no evidence in the functionality of the application that the integration had been achieved and there was an absence of documentary confirmation that these integration efforts had been completed by the stakeholders.

4.2.8 Unfruitful expenditure due to non-utilisation of e-Nirman

To monitor both physical and financial progress of pre-construction and construction activities of different projects, the Works Department had introduced e-Nirman during March 2013. IDCOL Software Limited (ISL), authorised Government PSU for procurement of hardware and software, was paid ₹1.49 crore for the development and maintenance of e-Nirman up to March 2016 and ₹26.94 lakh for its maintenance from June 2016 to May 2019. The Department did not renew the maintenance contract thereafter, and the process of liquidation of ISL was started in May 2020.

During scrutiny of records and e-Nirman web portal in three CCEs offices, Audit noticed that there were partial entries of progress of Works till December 2020 and none of the divisions had uploaded the details of works since January 2021. Thereafter ISL intimated (January 2022) that it was not possible to continue the maintenance work due to its liquidation and therefore asked the GoO to take alternative measures. However, it was noted that the Department did not initiate any further steps for the maintenance of e-Nirman. As a result, e-Nirman could not become fully operational and the Department did not monitor the progress of works through the web portal despite incurring expenditure of ₹26.94 lakh. Further, the Works Department had decided (April 2022) to integrate e-Nirman with WAMIS, the same also did not succeed (February 2024) as the RD Department (Nodal department) did not carry out the required integration work giving the reason that e-Nirman is a standalone application of Works Department and was not used by any other Department.

Thus, the objective of implementing the portal was not achieved in the absence of integration of e-Nirman with WAMIS despite lapse of more than a year, and the expenditure of ₹1.76 crore towards development and maintenance of e-Nirman was consequently rendered unfruitful.

The Works Department stated (June 2024) that the integration of e-Nirman with WAMIS would be taken up.

4.2.9 Inadequate training of personnel

WAMIS is a complex application deployed at one centralised location and with Technical Sections at Divisional Offices responsible for user adoption. Every user has been allotted a Unique ID and Password for use in WAMIS. For efficient use of the system, it was necessary that the users were well versed with its features and functionalities, hence, as per the agreement with CDAC, training was to be imparted to the users by CDAC.

However, Audit noticed that only two trainings (on DSC process and e-MB module) for one day each, was imparted to WAMIS users of Works Department during the five-year period from 2018 to 2023 by CDAC. This was despite the fact that new recruits had joined the Department during these period and additional functionalities had been mandated for use by the Department. Thus, training imparted to the personnel of the Department was inadequate.

Audit noticed that incorrect entries had been made in WAMIS by users and that there were delays in the adoption and use of modules available. Regular training programmes for the users would have mitigated risks related to user adoption and correct use of the system, as intended.

Without mentioning the period of training, the Works Department stated (June 2024) that a lot of training have been imparted to the users of WAMIS and User Manuals for each module have been uploaded on the website. However, the fact remained that the risks related to user adoption and incorrect use of the system continued to persist.

4.2.10 Lack of human resources

As per WAMIS user manual, work proposals are to be initiated by Section Officer (Junior Engineers) and submitted to Sub Divisional Officers (SDO) for further submission to Superintending Engineers through WAMIS.

Scrutiny of records in 12 test checked divisions revealed that as against the requirement of 157 JEs and 60 SDOs, 98 JEs and 46 SDOs respectively were posted (November 2023) as shown in **Table 4.9**.

Table 4.9: Details of sanctioned strength, men-in-position and vacancies in 12 test checked divisions as of November 2023

Sl. No.	Name of the division	Sub Divisional Officers / Deputy Executive Engineer/ Assistant Executive Engineer			Junior Engineer / Assistant Engineer		
		SS as per norms	MIP	Vacancy (-) / Excess (+)	SS as per norms	MIP	Vacancy (-) / Excess (+)
1	Angul	06	05	(-) 01	16	08	(-) 08
2	Balangir	05	05	0	11	07	(-) 04
3	Bhubaneswar IV	06	04	(-) 02	17	10	(-) 07
4	Dhenkanal	05	05	0	15	12	(-) 03
5	Jharsuguda	05	04	(-) 01	12	11	(-) 01
6	Keonjhar	05	05	0	16	10	(-) 06
7	Sonepur	05	04	(-) 01	11	05	(-) 06

Sl. No.	Name of the division	Sub Divisional Officers / Deputy Executive Engineer/ Assistant Executive Engineer			Junior Engineer / Assistant Engineer		
		SS as per norms	MIP	Vacancy (-) / Excess (+)	SS as per norms	MIP	Vacancy (-) / Excess (+)
8	Sambalpur I	04	02	(-) 02	14	07	(-) 07
9	Sambalpur II	05	04	(-) 01	13	07	(-) 06
10	Sundargarh	06	05	(-) 01	16	11	(-) 05
11	NH Cuttack	05	02	(-) 03	08	06	(-) 02
12	QCD Cuttack	03	01	(-) 02	08	04	(-) 04
Total		60	46	(-) 14	157	98	(-) 59

These vacancies adversely affected the implementation of WAMIS for automated workflow in the Divisions. All modules of WAMIS could not be implemented in field units of the Works Department. The shortage of manpower in divisions culminated in incorrect data entry with regard to date of commencement/completion of works *etc.*, as discussed in *paragraph 4.3*.

While accepting shortage of human resources, the Works Department stated (June 2024) that the requirement of Human resource was under active consideration of the Government.

4.3 Execution and adequacy of IT controls in WAMIS

To examine whether requirements of availability, confidentiality and integrity of data stored in WAMIS had been achieved and to examine whether application controls had been implemented in WAMIS modules to ensure compliance with executive instructions, Audit analysed the database for the period April 2018 to March 2023, and observed the following:

4.3.1 Deficiencies in User Management

As per Information Technology (IT) Security Guidelines issued under Schedule-II of Information Technology Rules 2000, all employees must be allotted a unique ID. User identity scheme must be defined and identity provisioning process should follow a workflow with proper access control from initiation of work proposal to payment on work completion.

Under this user access provision, user access deactivation request must be submitted immediately upon termination of employment/transfer, instances of non-compliance, suspicious activity and in case required as part of disciplinary action *etc.*, to avoid misuse of user ID and password. Further, the guidelines stipulated strict enforcement of password policy providing features like use of complex passwords, change of password at least once in 90 days, and use of multifactor authentication. Stored user passwords in the database must be salted⁹³ and hashed, for enhanced security.

⁹³ Salted hash algorithms help to protect password hashes against dictionary attacks by introducing additional randomness. A random string (called salt) is either appended or prepended to the password and then hashed, to ensure that even if two users select the same password, the resulting hash is unique

Audit noticed that WAMIS had implemented a post-based authentication system, with the provision of mapping individual employees to posts. The deficiencies noticed in the application controls for user management are described below.

4.3.2 Absence of mandatory mapping of user IDs with employee IDs

Audit examined the database related to mapping of posts to individual employees and noticed that out of 2,147 posts (user IDs) created in the Works Department, only 25 (1.16 *per cent*) posts had been mapped to employee IDs. The remaining posts had not been mapped to employee IDs, which resulted in absence of accountability as to which employee was actually assigned and was using the user ID.

Audit further noticed that the Department was not in a position to fix responsibility on individual employees even in cases of any non-compliant action on the part of users, due to the absence of application controls and lack of mapping of each user ID with employee IDs.

Further, Audit noticed that:

- There is no formalised workflow or logs for creation of a new user ID in the system. Audit noted that in 985 out of 2,147 user IDs, not even the dates of creation of user IDs had been recorded.
- In 1,987 out of 2,147 user IDs, passwords had not been updated/changed even once during the period 2018-2023.
- Multi-factor authentication, such as requiring OTP in addition to entering the password had not been implemented.
- A well-defined password policy like the one defined by Ministry of Electronics & Information Technology (MeitY) had not been adopted and implemented. Therefore, the system remained exposed to the risk of hacking by using password attacks.
- Passwords had been stored in the database using the MD5 hash function⁹⁴ in place of SHA256, which was not adequately strong as it was susceptible to attempts to reverse engineer the password.

Accepting these facts, the RD Department stated (May 2024) that there is functionality for registration of mobile number of employees and provision of resetting of password through OTP verification and that implementation of multi factor authentication is under progress. The Works Department reiterated the same response (June 2024).

⁹⁴ Message Digest Algorithm 5 (MD5) hash function is a cryptographic algorithm first introduced in 1991 which is used to generate a 128 bit hash and is significantly shorter than modern secure hash functions like SHA-256 or SHA-3 (first published in 2001 and 2015 respectively)

4.3.3 Absence of application controls to mandate employee data, and lack of integration with HRMS

Employee registration is a hierarchy-based process⁹⁵ in WAMIS and after registration, the employee ID was required to be mapped to the post based user ID.

Audit analysed the employee master table, the employee designation table and the employee service table and noticed that 2,856 employees of the Works Department had been registered in WAMIS as of March 2023.

Out of these 2,856 employees, mobile number and Human Resource Management System ID had been recorded only in case of 479 (16.77 *per cent*) employees.

This indicated that application controls for mandating the entry of HRMS ID had not been implemented in the system. This in turn resulted in the absence of mapping of user IDs with the HRMS ID of employees. Due to absence of application controls to mandate the entry of mobile number, SMS alerts could not be sent to notify and alert the concerned employee regarding required actions such as change of password, OTP verification, submission of Administrative Approval, Award of Contract, Deviation, Extension of Time and other workflows.

Audit also examined the status of employees with active status in 12 test checked Divisions and noticed that out of 430 employees recorded as active on WAMIS, only 304 were actually posted in those Divisions as of March 2023. This indicated that the remaining 126 employees had either retired/been transferred / had expired.

This indicated that in the absence of integration with HRMS, the current status of employees could not be updated on WAMIS, with the risk that even IDs of retired / expired employees could be potentially mapped to post-based user IDs.

The Works Department stated (March 2024) that registration of employees with the required data fields had been made mandatory for the RD Department. Action would be taken to make similar registration mandatory in the Works Department as well.

4.3.4 Absence of functionality to mandate recording of user IDs in system logs

Paragraph 7 (b and c) of IT Act, 2000 stipulated that the electronic record originally generated should be retained for identification of the origin, destination, date and time of dispatch / receipt of such electronic record. Hence, any IT System was required to record the user details with time stamp for each activity.

⁹⁵ The top post in the hierarchy can register employees lower in his hierarchy *e.g.*, CE can register SE under him and so on.

The system logs for recording critical activities of users in tables like Account module (management of payment voucher, opening balance), Works module (work proposal, split work, administrative approval, technical sanction *etc.*) User's module (user details) were captured in the system from July 2013, November 2018 and February 2020 onwards respectively.

Audit analysed the activity logs as of March 2023 for a detailed examination of user activities and found that in 1,91,281 out of a total of 71,62,003 user activities, user IDs had not been recorded due to deficiency in the design of the system log where recording of user IDs had not been made mandatory. This indicated that the main objective of maintaining the system logs *i.e.*, fixing responsibility on individual users who had carried out the user activities, had not been achieved.

Further, missing user IDs were higher in number in case of activities related to RA Bills, HR Bills and Work Split Master, all of which are associated with high risk of non-compliance. In the absence of user IDs, the system was not in a position to facilitate fixing of responsibility in case of detection of error/fraud.

Accepting these facts, the RD Department stated (May 2024) that this issue would be examined and that appropriate actions would be taken for resolution.

4.3.5 Absence of Database Administrator logs for WAMIS

Paragraph 9.4 of Schedule III of IT Rules, 2000 envisaged that the electronic audit log system must include mechanisms to protect the log files from unauthorised viewing, modification and deletion. The deficiencies observed in the maintenance of system logs are discussed below.

In case of WAMIS, Database Administrator (DBA) role was being fulfilled by CDAC. DBA log consists of details of all back-end activities of the DBA user such as modification, deletion, insertion of transactions or master records, or changes to the definition of table structures, functions, procedures, other configurations *etc.*, by using SQL statements or scripts.

Audit noticed the absence of DBA log for WAMIS since inception to March 2023. In response to the audit query in this regard, RD Department stated that the Community Edition of MySQL Server 5.7 was being used for WAMIS, which did not have provision for monitoring of logging and auditing. This indicated that due to the use of software with insufficient provisions, no log was being maintained to track the above critical actions of CDAC.

As described previously, WAMIS DBA role was being fulfilled by CDAC rather than a State Government Officer. In addition, it was also noted that no DBA log was being maintained. This is a significant and material risk, since any non-compliant actions could potentially be subsequently erased by the DBA, without any trace. Audit was unable to derive assurance that there had been no such irregular actions taken by the DBA due to the absence of the log data.

Accepting the fact of absence of DBA log, the RD Department stated (May 2024) that steps will be taken to procure the Enterprise Edition of MySQL Server.

4.3.6 Absence of functionality and lack of mapping with business rules

All relevant business rules and procedures applicable to the Works Department were required to be identified and suitably incorporated into WAMIS.

Audit analysed the mapping of business rules with the workflows and application controls implemented in WAMIS and noted the following observations.

4.3.7 Absence of functionality to blacklist contractors

Appendix XXXIV of OPWD Code grants power to the CE to blacklist a contractor with the approval of concerned administrative department. However, there was no functionality in WAMIS to manage the process of blacklisting of contractors in compliance with the OPWD Code.

Audit noticed that seven contractors of two test checked R&B Divisions viz., Angul and Jharsuguda had been debarred by division/blacklisted by the CE between December 2020 and July 2023. Audit verified the WAMIS contract data and found that five out of these seven contractors were irregularly awarded 62 works in other divisions despite being debarred, as detailed below:

Table No. 4.10: Details of Contractor blacklisted and awarded work by other divisions during that period.

Sl. No.	Contractor Name	Number of works awarded during debarment	Agreement Value (₹in crore)	Debarred from	Debarred up to
1	Tripura Behera	24	1.14	03.12.2020	02.12.2023
2	Subash Chandra Mohanty	34	13.82	03.12.2020	02.12.2023
3	Surya Narayan Danga	1	0.02	23.02.2022	Not Specified
4	Utkal Nath	1	0.04	03.12.2020	02.12.2023
5	Biswanath Sahoo	2	2.72	05.01.2022	Not specified
Grand Total		62	17.74		

Source: WAMIS database

As WAMIS did not have blacklisting provision, the users were unable to have consolidated, up to date information on blacklisted contractors.

If the functionality for blacklisting contractors had been implemented in WAMIS, the system workflow would not have permitted the award of contracts to blacklisted contractors. Compliance with the prescribed provision in the OPWD Code would have been enforced by the system automatically.

The Works Department stated (June 2024) that identifying/blacklisting of any contractor is the mandate of Contractors Data Management System (CDMS). When a new contract is being uploaded in WAMIS, the contractor details were fetched from CDMS through Application Programming Interface. The response was not tenable, since Audit noticed that CDMS did not have any entries for blacklisted contractors upto February 2022 and hence, the updated data of blacklisted contractors could not be made available to WAMIS.

4.3.8 Absence of functionality related to payment and recovery of mobilisation advances

Paragraph 3.7.21(C) of OPWD Code stipulated that advance to the contractors was to be sanctioned with interest at the rate of 18 *per cent* per annum only in exceptional cases when such advances seem indispensable provided that necessary precautions are taken for securing the Government against loss. Clause 19.2.1 of the Model Engineering, Procurement and Construction (EPC) contract also stipulated that the Authority shall make an advance payment to the contractor for a sum equal to an amount of 10 *per cent* of the contract prices for mobilisation and shall be repaid by the contractor to the Authority not later than 365 days. The advance payment is deemed as interest bearing at the rate of 10 *per cent* per annum. In case of failure of the contractor to repay the amount, the contractor has to pay interest at the rate of 18 *per cent* per annum for each day of delay.

However, no functionality was implemented in WAMIS to record the details of advance amounts permissible to be paid, actual advance amount paid, the interest rates that would be applicable, the amount of interest and advance repayment due and amount of interest and advance repayment yet to be recovered from contractors. In the absence of this key functionality in the system, the process of monitoring the advances paid and the status of interest and advance repayment amount due and recovery was carried out manually, with the material risk of non-compliance.

Audit examined records at 12 test checked divisions and noticed that there was non-compliance in this process in case of EPC contractors for three works at the Sundargarh R&B Division. The results of examination are tabulated in **Table 4.11**.

Table 4.11: Details of mobilisation advances granted to EPC contractors and not recovered as of September 2023

(₹ in crore)

Sl. No.	Name of the Work and Agreement No. & Year	Agreement cost	Advance to be granted (10 percent of agreement cost)	Payment between	Advance granted	Interest on advance	Recovered		Not recovered		Total advance and interest due for recovery
							Advance	Interest	Advance	Interest	
1	Construction of five major bridges and six minor bridges under coal corridor from Bankibahal–Bhedabahal (01 EPC 2018-2019)	71.41	7.14	August 2019 and October 2019	7.14	4.96	7.14	2.06	0	2.90	2.90

Sl. No.	Name of the Work and Agreement No. & Year	Agreement cost	Advance to be granted (10 percent of agreement cost)	Payment between	Advance granted	Interest on advance	Recovered		Not recovered		Total advance and interest due for recovery
							Advance	Interest	Advance	Interest	
2	Construction of dedicated coal corridor from Bankibahal (coal mines) to Bhedabahal from 00 to 30/811 km (Pkg-II) including trumpet at ch 73/375 on SH 10 (01 EPC 2020-21)	184.46	18.45	November 2020 And January 2021	20.66	4.87	17.65	0	3.01	4.87	7.88
3	Improvement of Duduka-Gopalpur Toparia Road (MDR) to 2 lanes with paved shoulder from 6/206 to 28/564 km including Bileimunda old existing road of length 1.440 km (01 EPC 2021-22)	102.65	10.26	February 2022 And April 2022	11.50	1.05	11.50	0.83	0	0.22	0.22
Total		358.52	35.85		39.30	10.88	36.29	2.89	3.01	7.99	11.00

Source: Information furnished by Sundargarh R&B Division

The above table indicated the following:

- Mobilisation advance of ₹32.16 crore was paid to the contractors, against the admissible amount of ₹28.71 crore in case of works listed at Sl. Nos. 2 and 3 of the Table. This resulted in an undue favor of ₹3.45 crore to the concerned contractors.
- Out of mobilisation advance of ₹20.66 crore paid in case of work listed at Sl. No.2 of the Table, only ₹17.65 crore had been recovered (November 2023) and the balance amount of ₹3.01 crore had not yet been recovered from the contractor, even after three years.
- Out of ₹10.88 crore of interest due on all three works listed in the Table, ₹7.99 crore was yet to be recovered, even after one to five years.

Further, the Divisional Officers did not exercise due diligence in monitoring the manually maintained contractors' ledgers for the advances paid and recoveries to be effected, even at the time of payment of RA bills to the contractors. Payments were made without deducting the advance paid and interest amount due from the contractor.

In case this functionality had been implemented in WAMIS, the system would have enabled.

- Compliance with the OPWD Code and contractual clause on limits for amounts that could be paid as mobilisation advances.
- Generation of timely alerts by email/ SMS to both the contractors and the Divisional Officers about amounts due for recovery at periodic intervals.

- Generation of MIS/ Exception Reports for senior Officers of the Works Department on amounts due for recovery beyond specified periods of time.
- Recovery of the due amounts at the time of payment of RA Bills of the contractor, and even from other RA Bills pertaining to the defaulting contractors, for other works related to any other Department of the State Government using WAMIS.

Audit also noticed that different conditions for granting interest bearing mobilisation advances had been adopted in the above three EPC contracts, in violation to OPWD Code, as tabulated in **Table 4.12** below.

Table 4.12: Clauses adopted for grant of mobilisation advances in EPC Contracts

Sl. No.	Agreement No. and Year	Particulars in brief with reference to Clause 19.2.1 of agreement
1	01 EPC 2018-19	Interest bearing advance payment at the rate of 10 <i>per cent</i> per annum
2.	01 EPC 2020-21	Interest free advance payment.
3.	01 EPC 2021-22	Interest bearing advance payment at the rate of 10 <i>per cent</i> per annum to be compounded quarterly and the interest to be recovered along with the recovery of advance payment.

Source: Information collected from the EPC agreements

In case of work at Sl. No. 2 above, it was seen that in spite of CE (DPI & Roads) clarification (February 2022) to enter into a supplementary agreement for correction of “interest free” to “interest bearing” advance payment, no supplementary agreement had been drawn (September 2023), which was highly irregular and not in compliance with OPWD code and directions of the CE (DPI & Roads).

Had this functionality been implemented in WAMIS, the built in business rules would have prevented such issues of non-compliance with the OPWD code.

The Works Department stated (June 2024) that calculation of interest is to be derived by the user manually as the system did not have provision in this regard. The fact remained that without implementation of application controls for correct calculation of interest in WAMIS, the responsibility for compliance remained on the individual users instead of shifting it to the system, and the objective of efficient functioning via automation could not be achieved.

4.3.9 Absence of functionality related to management of security deposits received from contractors

The Central Public Works Accounts (CPWA) Code specified that security deposits received from contractors, which were unclaimed for more than three complete account years, should be credited to the Government account as lapsed deposits. It also stipulates that the record for the transactions relating to Public Works Deposits should be maintained in the Divisional Office in a register in the same form as the Suspense Register (CPWA 67). The deposit register should show, month by month, the total receipts and adjustments and

the closing balance of each separate deposit item. From the deposit register, a monthly extract (Schedule of Deposit) from CPWA 79 should be prepared, for submission to the Pay and Accounts Officer.

Audit noticed that WAMIS had a functionality to record and maintain the total balances of security deposit balances. As of 01 April 2023, there was balance of ₹915.55 crore of security deposits in field units of Works Department. The overall balance at the Department level and in the 12 test checked Divisions was as follows:

Table 4.13: Statement showing the Security deposit during 2018-2023

(₹ in crore)

Description	Opening Balance as on 01 April 2018	Credit during 2018-2023	Debit during 2018-2023	Total Balance as on 01 April 2023
Works Department	730.66	1,174.37	989.48	915.55
Test checked 12 divisions	181.37	13.10	10.77	183.70

Source: Extracted from WAMIS Data

WAMIS had the functionality to generate the statement of security deposits (Form 67). However, there was no functionality to record and maintain work-wise data (opening balances, credits and debits) for the security deposits. The Divisional Officers were continuing to manually maintain the security deposit register in the absence of this functionality in WAMIS.

In the absence of work-wise details in the system,

- the security deposit refund transactions did not have work reference number, which was a significant control deficiency;
- status of lapsed deposits could not be monitored in the system, due to absence of recording of details related to the defect liability period;
- generation of timely alerts by email/ SMS to both the contractors and the Divisional Officers about amounts due for refund or lapsed deposits was not possible; and
- generation of MIS/ Exception Reports on amounts due for refund or on lapsed deposits beyond specified periods of time, was not possible.

Accepting the fact, the Government assured (June 2024) that the required functionality to manage security deposits in compliance with the OPWD Code would be implemented in WAMIS.

Further, Audit observed absence of use of WAMIS for processes related to managing security deposit, defect liability periods and Bank Guarantees, as discussed below:

- **Monitoring status of Security deposits, Defective liability periods and Performance securities:** As per OPWD Code (Amendment

2017), Additional Performance Security⁹⁶ (APS) shall be obtained from the bidder when the bid amount is less than the estimated cost put to tender in the shape of demand draft (DD)/ Term Deposit Receipt (TDR) pledged in favour of SE. Further, the OPWD Code stipulated that the earnest money deposit (EMD) to accompany the tender and the security deposit (SD) required in the case of the accepted tender which is refundable after one year or such period as specified in the agreement from the date of satisfactory completion of the work provided that the contractor’s final bill has been paid. However, Audit observed that in the absence of end to end integration of e-Procurement with WAMIS, the post tender details of awarded contract like contractor name, PAN number, contractor’s licence, GST number and BG submitted while participating tender were being manually entered in WAMIS by the divisions. Besides this, the entry of details relating to the bank guarantee (BG), EMD, APS and defect liability period (DLP) had not been made mandatory in the WAMIS.

Audit analysed the WAMIS data of contracts awarded and the result is tabulated as **Table 4.14**:

Table 4.14: Availability of contract data relating to BG, APS, EMD and DLP entered in WAMIS

Year	No. of works awarded contract	No. of works having BG	No. of works/ tenders having EMD	No. of works having APS	No. of works having DLP
2018-19	69,761	3,028	1	732	1
2019-20	65,175	6,789	11	5,352	1
2020-21	62,503	695	263	14,825	11
2021-22	59,710	25	145	19	12
2022-23	62,750	25	1	0	1
Total	3,19,899	10,562	421	20,928	26

Source: Extracted from WAMIS data

From the above table, it can be observed that out of the total 3,19,899 works contracts, the entries relating to BG, EMD, APS and DLP were not made in WAMIS in maximum number of cases owing to the absence of application controls mandating these entries into the system. In the absence of required information with regard to BG, EMD, APS and DLP, the system is not equipped to generate MIS/Exception Reports to ensure compliance with the requirements of (i) preventing release of BG/APS before the end of DLP and settlement of the final bills of the contractors, (ii) reporting the status of EMD/BG/APS to higher authorities, and (iii) to fulfil other related business requirements as specified by the OPWD Code.

Further, during test check of 12 divisions, in following cases Audit noticed reduction of Defect Liability Period from three to one year while drawing up agreements and refund of Security Deposits before completion of work or

⁹⁶ The successful bidder who has quoted less bid price / rates than the estimated cost put to tender shall have to furnish the exact amount of differential cost *i.e.*, estimated cost put to tender minus the quoted amount as Additional Performance Security

DLP. This action was in contravention of norms prescribed by Ministry of Road Transport and Highways (MoRT&H) and tender conditions.

- In case of the work of 'Improvement of Chhuinbandh-Lukapada Road from 0.00 to 4.065 km and 7.150 to 10.00 km in the Balangir District', finalised under the State Plan in July 2022 with money value of ₹4.44 crore, R&B Division, Balangir reduced the Defect Liability Period to one year in the agreement instead of three years as provided in Clause 95 of Detailed Tender Call Notice (DTCN) of the said work.
- In another case, clause 2(ii) of the contract agreement, the Security Deposit was to be refunded after completion of DLP of three years from the date of completion of the work, provided the final bill has been paid and defects, if any rectified. However, R&B Division, Dhenkanal released the SD of ₹60.25 lakh to the contractor in two years before completion of the DLP.
- Similarly, R&B Division, Keonjhar released the SDs of ₹24.45 lakh to the contractors before the completion of works as detailed in *Appendix-XVII*. The SE, Keonjhar R&B Division stated (July 2023) that due to financial crunch during COVID, the Security Deposit was released with production of BGs as per government order. The reply was not acceptable since the SE did not provide any documentary evidence to Audit for receipt of BG in support of released security amount.

Thus, in the absence of required functionality and application controls in WAMIS for such pre/post tendering processes, there were significant risks of non-compliance of the OPWD/MoRT&H provisions and DTCN terms that could take place at the level of the Divisions.

- **Absence of functionality to Manage Bank Guarantees:** The WAMIS system has the provision to record the details of Bank Guarantee (BG) number, issuing bank, date of BG, validity start date and validity end date. However, due to lack of enforcement of mandatory entry into the fields and lack of functionality to generate exception reports in MIS, the expiry of BG could not be monitored via WAMIS by the divisions.

Audit examination of bank guarantees in 12 test checked divisions revealed that in 37 cases pertaining to eight divisions⁹⁷ during 2018-2023, BGs amounting to ₹24.08 crore became invalid within the defect liability period. Lapse of validity period of BGs ranged between 17 and 1,347 days. In the absence of application controls in handling expiry of validity period of BG in WAMIS, the expired BGs could not be identified as a result, works could not be secured against defects and there was undue favour to the contractors as detailed in *Appendix-XVIII*.

In reply, Works Department stated (June 2024) that the security deposit and DLP and management of BG has not been made mandatory. The

⁹⁷ Angul, Balangir, Bhubaneswar No. IV, Jharsuguda, Keonjhar, Sambalpur No. I, Sambalpur No. II and Sundargarh

response only reflected the fact that due to non-entry of these details in WAMIS, the responsibility of ensuring compliance with the executive instructions remained with the individual users instead of having shifted to the system and hence, the benefits of having implemented WAMIS had not yet been fully realised.

4.4 Deficiencies in application controls in modules used by Works Department

Out of the total 13 modules in WAMIS, seven modules were being used by the Works Department. The deficiencies noticed in the application controls of the modules being used, are discussed below.

4.4.1 Budget module

Budget Management System (Budget module) was implemented (December 2009) and work-wise allotment made live (April 2015) by CDAC for use by various Departments, to facilitate capturing of budget details, generation of reports and to control expenditure as per allotment.

Audit noticed that RD Department was using the budget module and providing work wise allotment to divisions. However, the Works Department had not used work-wise allotment provided for in the Budget module in WAMIS, as of March 2023.

The CEs of Works Department were providing lump sum allotment under different heads of accounts to the divisional offices, instead of work-wise allotment for non-plan projects. The divisions were manually entering this head of account-wise budget data into WAMIS for generation of monthly accounts and for submission of accounts to AG (A&E).

Results of analysis of allotment and expenditure data in the Budget module of WAMIS for the period 2018-2023 for the Works Department are tabulated in **Table 4.15** below:

Table 4.15: Allotment and expenditure amount in the Budget and Accounts Module

Sl. No.	Condition	Total No. of cases in Works Department	No. of cases in test checked divisions
1	Allotment = 0 and Expenditure = 0	25,745	8,405
2	Allotment = 0 and Expenditure > 0	11,392	5,236
3	Allotment < Expenditure	1,782	499
4	Allotment > Expenditure	1,43,663	34,357
	Total	1,82,582	48,497

Source: Data extracted from WAMIS database

From the above, it can be seen that in 1,782 cases out of 1,82,582 cases, the expenditure incurred was higher than the allotment and in 8,405 cases, the expenditure and allotment was zero, in 12 test checked divisions.

Audit also verified IFMS data and Form 64 of the monthly accounts in WAMIS for allotment and expenditure on works in the 12 test checked Divisions. Audit observed that excess of expenditure over allotment was because CE's office did not release work-wise allotment to the field units. Accordingly, entry of allotment was made in WAMIS by field units without validation from CE's office for expenditure while preparing Expenditure Schedule *i.e.*, Form 64 instead of auto generating Form 64 by fetching allotment and expenditure from the system.

Such cases of expenditure in excess of allotment in Works Department could have been prevented if functionality and application controls had been implemented in WAMIS and had it been mandatory to record and maintain work-wise allotment and expenditure under each Head of Account, rather than allowing recording of lump sum allotment under each Head of Account as was being done by the Works Department.

The Works Department stated (June 2024) that the correct use of the Budget module would be made mandatory for adoption from July 2024. However, the functionality for work-wise entry of allotment had not been made mandatory in Works Department (January 2025).

4.4.2 Absence of application controls to prevent excess expenditure on deposit works, by Divisions

Paragraph 3.2.1 of the OPWD Code stipulates that, essential prerequisites for commencement of public work are, AA, TS and allotment of funds. Paragraph 3.9.3 of OPWD Code Volume I required that the contribution/deposit should be realised before any liability is incurred on account of the work. Paragraph 16.2.2 of CPWA Code also stipulated that a consolidated record of monthly transactions of all the Deposit Works of the Division should be prepared in Form 65- Schedule of Deposit Works⁹⁸.

Audit examined Form 65 in WAMIS of 12 test checked Divisions and noticed that in nine⁹⁹ Divisions, an amount of ₹103.74 crore had been diverted from one Deposit Work to another during 2022-23. This had resulted in expenditure in excess of deposits received, in case of 39 works, as detailed in *Appendix-XIX*, besides resulting in non-compliance with the provision of the OPWD Code. These deficiencies had occurred because there was no functionality or application controls in the Accounts Module of WAMIS to prevent such diversion and resultant excess expenditure.

The Works Department stated (June 2024) that due to improper maintenance of schedule of deposit works (Form 65) by the Divisional Offices, the validation is made with the balance available in IFMS against the deposit ID. Validation is now in place at the time of passing of bills.

⁹⁸ The schedule shows the amount of deposit received and the expenditure incurred, both during the month and up to date in respect of each work

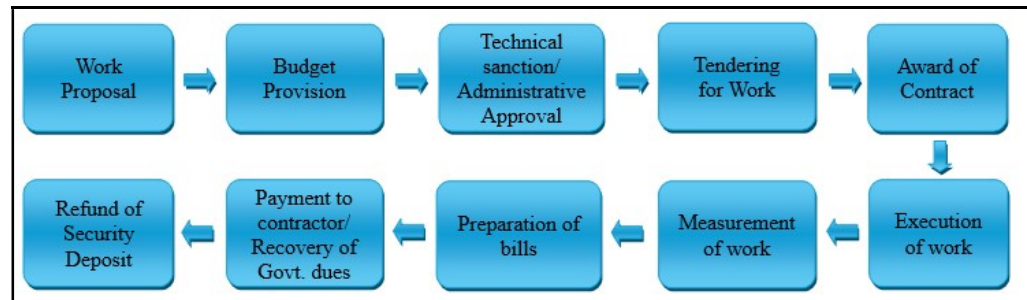
⁹⁹ Angul, Bhubaneswar Division-IV, Balangir, Dhenkanal, Jharsuguda, Sonepur, Sambalpur Division-I, Sundergarh R&B Divisions and Cuttack NH Division

The reply is not acceptable, as the Form 65 generated by Audit (July 2024) still contained errors in these cases.

4.4.3 Deficiency in application controls implemented in Works module

The Works module in WAMIS was required to have a functionality for creation of work proposals, AAs, TSs and award of contracts (AoCs) through automated work process. The work flow for this is depicted in **Chart-4.2** below:

Chart-4.2 Showing Workflow in WAMIS



Results of analysis of work proposals at various stages as recorded in WAMIS for the Works Department as a whole and in 12 test check divisions for the period 2018-2023 have been tabulated in **Table 4.16**:

Table 4.16: Stages for processing of work proposals for Works Department as a whole and at 12 test checked divisions

Sl. No.	No. of work proposals in WAMIS under various stages during 2018-2023	In Works Department	In test checked divisions
1	Work proposals submitted	2,95,037	60,640
2	Work proposals with TS	2,80,658	56,727
3	Works pending due to lack of TS	14,379	3,913
4	Works having both TS and AA	1,13,469	24,551
5	Works having AA but not TS	508	143
6	Works awarded (including splitting)	3,19,899	60,621
7	Works awarded without TS	4	1
8	Works awarded without AA	1,66,029	31,996

Source: Extracted from WAMIS

The above analysis revealed inconsistencies like works awarded without AA/TS, number of works awarded exceeding the works proposals *etc.*, as discussed below:

4.4.3.1 Absence of application controls to ensure creation of unique work IDs for same work

Work proposal is the initial stage for a specific work where all relevant details are recorded, so that they can be managed throughout the process of execution. The work proposal serves as a repository for key information for the work. A work proposal with a unique Work ID would be processed for AA/TS, allotment of budget, tendering, award of contract and payment. During the period from April 2018 to March 2023, Work IDs for 2,95,037 work proposals were created in WAMIS for the Works Department.

Audit analysed the data on work proposals and noticed that out of the above total work proposals created, 6,963 works had been mapped with 15,340 Work IDs *i.e.*, proposals for same work was being created multiple times with generation of multiple IDs. The number of Work IDs mapped with the same work ranged between 2 and 44 due to irregular splitting of work or change in head of accounts of the work either by the Department or by the Division. Audit noticed 1,548 works mapped with 3,371 Work IDs in the 12 test checked divisions. The number of Work IDs mapped with the same work ranged between 2 and 11.

An illustrative case, pertaining to Work Agreement Number 267 P1/2020-21 of Sambalpur (R&B) Division-I, which had been mapped with five Work IDs is tabulated in **Table 4.17** below:

Table 4.17: Statement showing mapping of more than one Work ID with the work having same description as per the Agreement Number 267 P1/ 2020-21

Sl. No.	Work Description as per Agreement	Work ID	Head ID	Date of work order	Accepted amount (₹)
1	Improvement to Sagjuri to Kusruda via Rangamathiapada Sunamudi from 0/000 km to 6/500 km (except from 3/695 km to 3/800 km) in Sambalpur District under State Plan for the year 2019-20)	8008	54747	20.01.2021	3,80,33,006
2		9965	54747	20.01.2021	3,80,33,006
3		10092	61543	20.01.2021	3,80,33,006
4		10116	54704	20.01.2021	3,80,33,006
5		10301	54704	20.01.2021	3,80,33,006

Source: Data extracted from WAMIS database

From the above table it may be seen that for the same agreement, duplicate work proposals with different work IDs were created under different budget heads during the execution of works. Audit also observed that bills were processed against each of these work IDs and payments made as per the head of account, increasing the risk for overpayment on the overall work.

Thus, creation of multiple IDs for the same work increased the risk of overpayment on a work and compromised the reliability of the Management Information System.

The Works Department has not given any relevant reply to the audit point (February 2024).

4.4.3.2 Absence of application controls to prevent and detect splitting of works

Paragraph 3.5.24 of OPWD Code prohibited the splitting up of works. Further, Paragraph 3.5.9 of OPWD Code stipulated that if the work is to be split up for execution, the approval of competent authority to accept the tender for the work as a whole should be obtained before inviting tender. However, repair works limited to ₹5.00 lakh under non-plan scheme, may be split up into small reaches after obtaining the approval of the competent authority.

Audit analysed the database and noticed that the work details were captured in the work proposal table and the split works were stored in another transaction table. Further, there was a third table to capture the agreement details in WAMIS. Audit joined the three tables in order to identify the split works where the amount of work was less than ₹5.00 lakh and noticed that 7,388 original works were split into 47,179 works during 2018-2023, for the Works Department as a whole and 891 original works were split into 5,189 works in the 12 test checked divisions. This was done to limit the estimated cost to within ₹5.00 lakh and thereby avoid the requirement of sanction by higher authorities. Audit also examined these cases in the test checked Divisions and observed that the works were split without obtaining prior approval of competent authority, in order to reduce the work value to within the financial power delegated to the Divisional officers. This irregular splitting was facilitated due to the absence of a workflow for the approval process of splitting. Audit noticed that WAMIS does not have functionality to generate MIS/Exception Reports for higher authorities to monitor the number and details of works which have a high risk of being split, based on criteria such as head of account, difference between the contract amount and the delegated financial power amount, divisional officer ID, geo-coded locational data for the work and other data fields which could have been mandatorily recorded for each Work ID.

Year-wise comparative statement of original works and split-up works for the Works Department as a whole and in the 12 test checked divisions has been tabulated in **Table 4.18**.

Table 4.18: Comparative statement of splitting of works in Works Department and 12 test checked divisions during April 2018 to March 2023

Year	Works Department			12 test checked divisions		
	Total No of original works	Total No. of split works	Awarded value in crore	No of original works	No. of split works	Awarded value in crore
2018-19	1,339	9,666	185.04	215	1,306	40.10
2019-20	1,391	9,065	166.08	198	1,032	25.46
2020-21	1,242	9,833	163.45	157	1,082	30.66
2021-22	1,816	11,316	242.97	156	1,054	31.64
2022-23	1,600	7,299	207.36	165	715	20.86
Total	7,388	47,179	964.90	891	5,189	148.72

Source: WAMIS database

Accepting the fact, the Works Department noted (March 2024) the observation for future guidance.

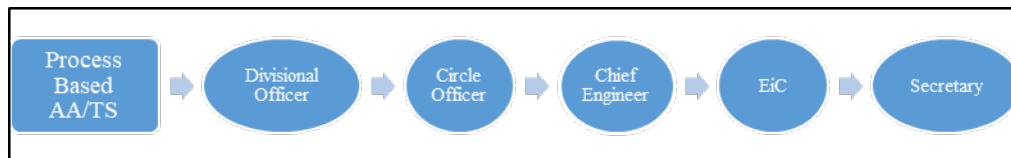
4.5 Non-utilisation of functionality available in WAMIS

4.5.1 Non-utilisation of functionality and workflows for processing Administrative Approval and Technical Sanction

Paragraphs 3.2.1 and 3.2.7 of OPWD Code stipulates that, essential prerequisites for commencement of public work are AA, TS and allotment of

funds. For every work proposed to be carried out, a properly detailed estimate must be prepared, to obtain the sanction from the competent authority. As per the work flow described in the WAMIS Works manual, the AA and TS was required to be processed based on **Chart 4.3** below:

Chart-4.3: Showing Workflow of AA/TS



However, Audit noticed that users in the Works Department were preparing manual estimates instead of e-Estimates and entering the details of AA and TS into WAMIS after obtaining them in offline mode from the competent authority. This was due to the fact that functionality and work flows for processing AA and TS in WAMIS was being used by the RD Department, but had not yet been made mandatory for use by the Works Department. Due to the non-adoption of workflow of WAMIS and adoption of previous manual processes, Audit observed discrepancies in AA and TS as follows:

Table 4.19: Details of work proposals of Works Department at various stages during 2018-2023

Year	Total No. of work proposals	Proposals finalised	Proposals not finalised	Proposals not finalised but having both TS and AA	Proposals not finalised but having only TS	Proposals not finalised but having only AA	Proposals not finalised but awarded contract
2018-19	61,822	18,449	43,373	5,315	36,498	28	45,782
2019-20	56,356	50,627	5,729	1,072	3,541	35	5,585
2020-21	53,155	51,524	1,631	514	406	46	1,166
2021-22	63,731	62,367	1,364	350	351	30	941
2022-23	59,973	58,987	986	40	50	14	101
Total	2,95,037	2,41,954	53,083	7,291	40,846	153	53,575

Source: Information from WAMIS database

From the above it may be seen that 53,083 work proposals were not finalised as of March 2023. Though above work proposals were not finalised, the concerned SEs sanctioned both TS and AA for 7,291 works, only TS for 40,846 works and only AA for 153 works, bypassing the WAMIS work flow and in deviation to OPWD code provisions. Analysis of WAMIS database further revealed that out of 53,083 non-finalised works, 47,687 works were split into 53,575 works and awarded during the period from April 2018 to March 2023 irregularly. This indicates that the WAMIS workflow was not being followed and no provisions in WAMIS existed to restrict such bypassing.

Accepting the fact that use of the available functionality and workflows for processing AA and TS in WAMIS, the Works Department stated (June 2024) that after making the use of the e-Estimates mandatory, instructions would be issued for mandatory use of WAMIS for processing AA and TS. The fact remained that e-Estimate module had not yet been implemented, as discussed in following paragraph.

4.5.2 Non-utilisation of e-Estimates module

Paragraph 2.2.26 of the OPWD Code stipulates that DO should ensure the preparation of plans and estimates for all works to be executed in his/her division.

The e-Estimates module in WAMIS was made live by CDAC for all Departments in January 2021. The e-Estimates module has a provision to generate estimates with reference to Schedule of Rates (SoR) and Analysis of Rates (AoR). After preparation of e-Estimates, the BoQs are automatically passed onto the e-Procurement, e-Agreement and e-Bill modules in WAMIS.

Audit analysed the WAMIS database and noticed that none of the Divisions of the Works Department had used the e-Estimate module and the estimates of works were being prepared manually. The reason for non-use of e-Estimate module was not on record.

Audit test checked estimates prepared in offline mode by the Works Department pertaining to the period January 2022 to November 2023, and noticed irregular expenditure of ₹167.90 crore in 26 works due to erroneous calculation of lead distance, steel quantity, fuel charges, cost of earth, length of road, overhead charges and hire charges, which was in violation of OPWD Code/SoR/AoR, as detailed in *Appendix-XX*. This irregular expenditure could have been minimised had the e-Estimate module been mandatorily implemented by the Divisions along with the implementation of application controls required to ensure compliance with the OPWD Code, BIS and IRC provisions.

The Works Department stated (June 2024) that e-Estimate module though implemented, was not made mandatory and all concerned were requested to use the module in WAMIS. This response only highlighted the fact that the e-Estimate module is not yet being used in the Works Department.

4.6 Under-utilisation of automated process based workflow of WAMIS

The design of WAMIS envisaged that the approval process for deviation or Extension of Time (EoT) flow would need to be initiated at that Section Officer level and escalated up and approved by the competent authority as per the delegation of financial powers. The flow diagram of deviation/EoT process in WAMIS is as follows:

Chart-4.4: Showing flow diagram of deviation/EoT process in WAMIS



The deviation details were stored in three tables viz., deviation master, deviation transaction and deviation cycle for process based deviation work flow. Deficiencies noticed during analysis of data of above three tables were discussed below:

4.6.1 Deficiencies in automated process flow for approval of deviation

The process based approval of deviations in WAMIS was made live by CDAC in July 2022 for all engineering departments. Prior to that, the deviations were processed manually and data entered into WAMIS.

Audit analysed data for the period from April 2018 to June 2022 and noticed that 16,715 deviations in 14,765 works had been entered into WAMIS. Though there was a provision to record the date of initiation of proposal for the deviation, in 13,736 deviations of 12,262 works, the same had not been recorded. Further, during July 2022 to March 2023, (after process based approval of deviations was made live), out of 2,996 deviations for 2,520 works, 2,884 deviations had been processed online and the remaining 112 deviations had been manually entered into WAMIS, indicating partial adoption of the new process flow of approval of deviation. Audit analysed the time stamps of the transactions during July 2022 to March 2023, and noticed that:

- Out of 2,884 deviations processed online, date of initiation was not captured in 33 cases of 19 divisions¹⁰⁰.
- In nine cases in six divisions¹⁰¹, the date of forwarding of deviation request was earlier than the date of initiation of proposal and the difference between these dates ranged between less than a day and 219 days.
- In 2,351 deviation proposals of 1,908 works, the date of approval was earlier than date of initiation of proposal and the difference ranged between one and 2,843 days. The age-wise approval of deviation proposals which were earlier than date of initiation is given in **Table 4.20** below:

Table 4.20: Age analysis of approval of deviation proposal before date of initiation of proposal

Period	Number of Deviation Applications
Less than one month	1,439
One to six months	624
Six months to one year	181
More than one year	107
Total	2,351

Source: Data extracted from WAMIS data

¹⁰⁰ i) Bhubaneswar General Public Health Division No.I, ii) Boudh R&B Division, iii) Cuttack R&B Division No. II, iii) Kendrapara R&B Division No. II, iv) Sambalpur R&B Division No.I., v) Bhubaneswar R&B Division No.III, vi) Angul R&B Division, vii) Balasore R&B Division, viii) Balliguda R&B Division, ix) Deogarh R&B Division, x) Ganjam R&B Division No. I, xi) Ghatagaon R&B Division, xii) Jharsuguda R&B Division, xiii) Kalahandi R&B Division, xiv) Kantabanji R&B Division, xv) Koraput R&B Division, xvi) Mayurbhanj R&B Division, xvii) Nayagarh R&B Division, xviii) Phulbani R&B Division and xix) Puri R&B Division

¹⁰¹ i) Jharsuguda NH Division, ii) Balangir R&B Division, Deogarh R&B Division, Ganjam II R&B Division, Kantabanji R&B Division and Rourkela R&B Division

As the time stamps were designed to be recorded automatically by the system, the presence of null values, date of forwarding of deviation request being earlier to proposal initiation date, approval date being earlier to initiation date *etc.*, indicated lack of application controls in WAMIS to enforce chronological and logical sequencing of dependent actions.

Audit test checked approval of deviation proposals in three¹⁰² circles during 2022-2023 and noticed that out of 136 deviation proposals received, 42 were approved at circle level, 74 forwarded to the CE, 11 cancelled and nine pending for disposal (December 2023). However, out of 136 deviation proposals, only 63 were forwarded to circles through WAMIS and remaining 73 had been submitted manually by the divisions under their jurisdiction. This reflected the fact that the process-based deviation approval was partially implemented by the Divisions, in the absence of instructions from the Works Department for mandatory use.

The Works Department stated (June 2024) that though process-based deviation was made live in July 2022, date validation was not in place to allow the Divisions to bring previously approved deviations into the system. The reply was not tenable, as it only reflected the fact that the responsibility for compliance continued to be on the individual users rather than the system and hence, the benefits from implementing WAMIS had not yet been fully realised.

4.6.2 Deficiencies in processed-based extension of time in WAMIS

Paragraph 3.5.30 of OPWD Code allowed for Extension of Time (EoT) for completion of any work on the grounds of unavoidable hindrance or any other grounds. The competent authority had to communicate his decision within 60 days from the date of receipt of recommendation in his office. The process-based EoT in WAMIS was made live by CDAC in July 2022. Prior to that the EoT was processed manually and details were entered in the WAMIS, after approval.

Audit analysed EoT data in the extension master and extension cycle tables in WAMIS and noticed the following:

- 3,409 EoT applications related to 2,790 works were entered by Works Department during 2018-2023 and date of submission for EoT was not captured in 127 cases.
- In 268 EoT applications of works, the date of approval of EoT was before submission of EoT application and difference ranged between one to 815 days. The reasons for such anomaly were attributed to manual entry of data in the system after approval of EoT.
- A total of 2,113 EoT applications for 1,720 works were recorded in WAMIS between July 2022 and March 2023 after the implementation of the process-based EoT system. Among these, EoT for 57 works had not been approved within the stipulated 60 day period, with delays

¹⁰² i) Bhubaneswar Central (R&B) Circle, ii) Dhenkanal R&B Circle and iii) Keonjhar R&B Circle

ranging from 14 to 208 days beyond the deadline. Additionally, in 180 applications, contrary to OPWD code provisions, the EoT approval date preceded the submission date, with discrepancies ranging from one to 787 days.

Audit test checked EoT approvals during 2022-2023 in three circles¹⁰³ and noticed that out of 132 EoT applications forwarded to CCE office, only 43 were processed through WAMIS and remaining 89 were processed manually. This reflected the fact that the process-based EoT approval was only partially implemented by the Divisions, in the absence of directions from the Works Department for its mandatory use.

While accepting the audit comments, the Works Department stated (June 2024) that the process-based EoT was made live in July 2022 but date validation was not in place to facilitate diversions in bringing the previously approved EoT into the system. The Department had, however, not stated what measures were taken to prevent data manipulation and ensure compliance with prescribed procedures.

4.6.3 Underutilisation of e-Measurement Book (e-MB) module

Appendix II of OPWD Code, Vol-II, stipulated that Sub Divisional Officers (SDO) and Divisional Officers (DO) are to check the accuracy of measurements recorded by subordinate officers. The DO should particularly measure at least 10 *per cent* of items of work done and should invariably record their findings in the register of inspections maintained at the site of works. Hence, to monitor the measurement of work done, e-MB was developed in WAMIS and made live by CDAC in October 2019. The e-MB module is at the core of the key application controls that were required to be implemented in WAMIS and addresses the main functions of the field Engineers of the Department to measure the work actually executed and record the same.

Audit analysed the WAMIS database and noticed that during 2019-2023, only 504 e-MBs were issued for 476 works, out of which 468 were used for 447 works in 17 divisions. During 2019-2023, in test checked 12 divisions, 238 e-MBs were issued for 227 works in three¹⁰⁴ divisions and measurements were entered in 225 e-MBs for 214 works indicating limited use of e-MB module of WAMIS. This also affected generation of e-Bill for making payment to contractors.

Audit examined the manually maintained Measurement Books at the test checked Divisions and noticed instances of overwriting/corrections till final measurement of works, without authentication of such corrections by the DO.

Audit noticed instances of erroneous recording of measurements due to manual intervention during test check of measurement books and estimates in

¹⁰³ Central (R&B) Circle, Bhubaneswar, Dhenkanal R&B Circle and Keonjhar R&B Circle

¹⁰⁴ Dhenkanal, Sonapur and Bhubaneswar IV R&B Divisions

one test checked division¹⁰⁵ which led to excess payment of ₹4.90 crore to the contractors as discussed below.

- The work ‘widening and strengthening of Govindpur-Gorposh Road from 0.0 to 11.500 km and 13.500 to 23.00 km’ under Central Road Fund (CRF) was taken up in January 2020 at a value of ₹27.45 crore in Sambalpur R&B Division II. It was noted that the contractor had not executed moorum shoulder for 450 m (from 10.400 to 10.660 km and 11.00 to 11.250 km) but measurement was recorded as 2,300 m (from 9.200 to 11.500 km) for the same. Without deducting the quantity of 162 cum for non-execution of 450 m, the contractor was paid (September 2021) ₹20.52 lakh for execution of total 3,537 cum violating OPWD Code and leading to excess payment of ₹79,875. The SE, Sambalpur R&B Division-II accepted and stated that the excess paid amount would be adjusted during preparation of final bill (January 2023).
- The widening of a two lane road to a four lane road from Bankibahal to Kanika Railway siding in Sundargarh district on EPC mode was taken up in February 2016 for ₹199.36 crore. The work provided for execution of nine meter carriageway width (including paved shoulders) on each side. The *pro rata* payment made for construction of road proper was 74.15 per cent i.e., ₹147.83 crore. It was, however, observed that the contractor had constructed 8.75 meter of carriageway width on each side of the road resulting in lesser execution of carriage width for 0.25 meter. This resulted in undue benefit to contractor for ₹4.11 crore since the EE did not check/measure the work before release of payments to the contractor. No accountability was fixed (March 2020) for such lapse, and the cost was not reduced after revising the scope of work as envisaged under the contract.

Thus, due to non-implementation of e-MB, there were errors/corrections in manual measurement book and erroneous payments could be made to the contractor.

The Works Department stated (June 2024) that after implementation of the e-Estimate module, the use of e-MB module will be made mandatory. The fact remained that due to non-implementation of e-Estimate modules, the e-MB could not be utilised.

4.6.4 Implementation of mobile application for geo-tagging of works

To ensure that works taken up under various schemes meet the requisite standards and to assess the actual progress of individual works, a mobile based application was developed (September 2013) in WAMIS which enables the user to capture geo-tagged photographs of any on-going work on the construction site. Such photographs can later be viewed through a viewer application along with other details of the concerned work. The JE was to upload minimum of one and maximum of 15 photographs for a single work.

¹⁰⁵ Sambalpur R&B Division-II

Analysis of usage of mobile app in Works Department revealed that only 79 photographs of 74 works out of 3.20 lakh works were uploaded by four divisions¹⁰⁶ during 2018-2023, geo-coordinates were also not captured in 78 photographs indicating non-utilisation of the mobile app. Authenticity of the uploaded photographs could not be verified in the absence of geo-tagging.

The Works Department stated (March 2024) that on implementation of e-Estimate and e-MB in full shape, mobile application for Geo tagging of works will be implemented.

4.6.5 Deficiencies in Bills module

As per the system design of WAMIS, Section Officer (Junior Engineer) after reviewing the measurements, prepares either a Running Account (RA) bill/ First and Final bill for each work. The workflow for processing bills across various levels of authority is described below.

Chart - 4.5: Workflow for processing bills on WAMIS



After finalisation of the bill by the Divisional Officer, the work bill details are transmitted from WAMIS to IFMS, for the purpose of payment to the contractor. After receipt of acknowledgment from IFMS, the bills are converted to vouchers in the system. The details of vouchers are then required to be entered into the cashbook, for the purpose of accounting for the concerned month.

The details related to the bills, vouchers, and payments were captured in the bills table, voucher master table and voucher transaction table respectively. The Bills module was made live by CDAC in December 2009.

The bills table was designed to record the workflow time stamps *i.e.*, date of receipt of the bill by Section Officer, date of sending the bill to Sub-Divisional Officer (SDO), date of sending bill to Auditor, date of sending bill to DAO and date of sending bill to Divisional Officer.

Audit analysed data in the bills table and noticed that:

- In the absence of workflow application controls in the Bills module, there were deviations from the intended workflow at various stages of processing of bills, in 206 out of 3,02,018 RA Bills, during 2018-2023, as detailed in *Appendix-XXI*.

¹⁰⁶ Deogarh NH Division, Bhadrak R&B Division, Keonjhar R&B Division and Baragarh R&B Division

- The dates of receipt of RA Bills in the Section was later than the date of initiation in 17 RA Bills processed during 2018-20 by the Works Department, which indicated that the workflow was not being implemented as intended and the timestamps for the workflow were not reliable.

The Works Department stated (June 2024) that deviations from the intended workflow take place when bills are unlocked by CDAC at the back end, based on the requests received from Divisions or when bills are to be sent back by higher authorities. The response itself indicated that the functionality of the workflow and the application controls implemented in the Bills module did not fully meet the business requirements of the Works Department and hence, back-end interventions with the assistance of CDAC had become necessary. Such back-end interventions represent significant risks to information security, especially in view of the missing provisions of system like DBA logs as described earlier in *Paragraph 4.3.5*.

4.6.6 Delay in processing of Bills

The Standard Operating Procedure (SoP March 2022) relating to payment of public contracts issued (03 March 2022) issued by the Works Department stipulates a time limit for passing of Running Account/Interim payment and Final bill for payment, as maximum 20 and 60 days respectively from the submission of bills by the contractor respectively.

Audit analysed delays in processing of Bills with reference to the timelines fixed, and conducted age analysis of the delays beyond the stipulated period of 20 days for RA bills and 60 days for final bills. The results have been tabulated in **Table 4.21**.

Table No 4.21: Age analysis of delays beyond the stipulated periods for processing of RA/ final Bills, during 2018-2023

Period of delay beyond the stipulated periods	Number of bills processed with delay	
	RA Bills	Final Bills
Less than a month	12,777	1,494
More than three months and less than six months	16,820	4,261
More than six months and less than one year	4,585	1,479
More than one year	2,317	846
Sub-total	36,499	8,080
Grand Total	44,579	

Source: Data extracted from WAMIS database

From the above table, it can be seen that 44,579 bills had been passed beyond the stipulated periods of 20/60 days, as of March 2023. The maximum time taken for the bills of 2018-2019 was 1,280 days and that for the period 2022-2023 was 250 days (as of March 2023). Input controls for passing of bills at each level should have been made mandatory in WAMIS for recording reasons for delay by users beyond the stipulated periods.

The Works Department admitted (June 2024) that controls to reflect the above stipulated periods in the SoP of Works Department had not yet been implemented in WAMIS, and that such controls would be implemented.

The response itself indicated that the Government had not implemented the above input controls as well as functionality for generation of MIS/ Exception Reports to monitor pendency of bills beyond the stipulated periods along with age analysis.

4.6.7 Absence of functionality for computation of price escalation in the Bills module

The User Requirement Specification (URS)/Functional Requirement Specification (FRS) for WAMIS was required to specify basic user requirements like computation of price escalation in the Bills module, to ensure compliance with OPWD Code provision. However, Audit noticed that processing controls for computing price escalation on the basis of user inputs such as quarter-wise works executed, index price, labour rate and material rate were not included in the URS/FRS due to which such provisions could not be implemented in WAMIS.

In the absence of such processing controls, Audit noticed that in the test checked Divisions, price escalation bills were being prepared manually and only the gross amounts were being uploaded to WAMIS. As a result, the vouchers generated for price escalation bills in WAMIS only contained the gross amount, without details of the computation of price escalation. Audit verified nine escalation bills amounting to ₹5.94 crore pertaining to one work of Sundargarh R&B Division which were calculated manually and paid through hand receipts instead of RA bills between February 2022 and January 2023. Due to the absence of processing controls in WAMIS for price escalation, the responsibility for ensuring compliance with the Codal provisions related to price escalation continued to be borne by the users, instead of being transferred to the system. In view of this deficiency in the control mechanism, there remained significant risks of error/ fraud in the price escalation process, which could have been mitigated through WAMIS.

The works Department admitted (June 2024) that there is no provision for auto calculation of price variation in WAMIS. The user had to manually compute the price escalation and perform data entry of the same into WAMIS. The Department assured that provision for computation of price escalation based on user inputs will be explored for implementation.

4.6.8 Absence of functionality for generation of bills on percentage basis of contract price weightages in case of EPC/ Lump sum contracts

In EPC/ Lump sum contracts, the contractors are to be paid for the work done on percentage basis of contract price weightages (as per Schedule-H¹⁰⁷ of the model contract), as there is no BoQ in case of these contracts. In URS, this requirement for generation of bills on percentage basis of contract price

¹⁰⁷ Proportions of the Contract Price for different stages of the Project

weightages for EPC/Lump sum Contracts was not considered due to incomplete system study.

Thus, the URS/FRS for WAMIS did not specify the requirement of generation of bills on percentage basis of contract price weightages after measurement of works in case of EPC/Lump sum contracts. Absence of such functionality in the Bills module of WAMIS resulted in non-compliance with contract clause (Schedule H) for payment to the contractors.

In the absence of this key functionality in WAMIS, the following was noted:

- Out of 12 test check divisions, in two¹⁰⁸ R&B Divisions, it was found that for payment of five EPC contracts, the division had prepared bills manually and were making payments to the contractors on the basis of hand receipts, which was highly irregular, and carried material risks of error/fraud.
- Monitoring bills and payments under these contracts was challenging, and there were instances of excess payment of ₹11.29 crore to contractors as reported in Paragraph No.7.13, Report No. 2 of 2024 of Comptroller and Auditor General of India – Government of Odisha, for the year ended March 2022.

The Works Department stated (June 2024) that the Schedule-H serves the purpose of BoQ in case of EPC contract, which is easily uploaded in WAMIS in case of EPC contract.

The response was not tenable, since this would only be a work-around and the required functionality specific to EPC/Lump sum contracts is required to be implemented in WAMIS.

4.7 Incorrect generation of MIS Reports

Management Information System (MIS) Reports are generated at various levels and in various modules of WAMIS, to review day to day activities of the Divisions and to assist the higher authorities in analysing the progress, both physical and financial of the works under each Division.

Audit examined the 30 MIS Reports¹⁰⁹ for the period 2018-23 in test checked divisions, which had been implemented in WAMIS and noticed the following deficiencies, indicating incorrect generation of these Reports:

- There was provision for generation of MIS report for General Arrangement Drawing (GAD) approval, AA, TS, physical progress report of works in WAMIS *etc.*, for monitoring. However, due to data not being updated, incomplete/unreliable MIS reports could be generated through WAMIS.

¹⁰⁸ Dhenkanal and Sundargarh R&B Divisions

¹⁰⁹ Generated by Audit (June to November 2023) from WAMIS, using the User ID and Password provided by CDAC

The Government in RD Department stated (June 2024) that as the Works Department is not using all WAMIS modules, there may be mismatch in AA/TS *etc.*

- Reports generated in MIS dashboard for new works, ongoing works, and works not yet started, *etc.*, for the financial year was inconsistent with actual execution in test checked divisions for the years 2018-19 to 2022-23.

To ascertain the correctness of MIS Reports, Audit examined them in three Circles¹¹⁰ and noticed the following deficiencies:

- At Dhenkanal R&B Circle, only three new works (an agreement for one work pertained to 2022-2023) were shown as taken up during 2023-2024 by the Dhenkanal R&B Division. However, verification of agreement register of Dhenkanal R&B Division revealed that the division had drawn 647 agreements during 2023-2024 as of November 2023.
- The real time MIS report of Central (R&B) Circle, Bhubaneswar showed that 82 new works were taken up by five divisions under their control, but as per the agreement registers, there were 3,303 agreements drawn by these divisions during 2022-23 (November 2023).
- The real time MIS report of Keonjhar (R&B) Circle, Keonjhar showed that 22 new works were taken up by four divisions under their control but as per the agreement registers, there were 1,452 agreements drawn by these divisions during 2022-23 (December 2023).

This indicated non-updation of data with regard to the agreements in WAMIS.

Thus, the Reports had become inconsistent and unreliable and could not depict the true picture of performances of divisions to the higher authorities for monitoring and decision making.

The Works Department accepted (June 2024) the audit observation and stated that there were mismatches of figures because all projects were not entered in normal process flow in WAMIS.

4.8 Monitoring and internal control mechanism

4.8.1 Lack of monitoring by WAMIS Committee

As per the agreement (May 2009) with CDAC, GoO was to form a Core Committee for implementation of WAMIS in the State. Accordingly, being the nodal department for implementation of WAMIS, RD Department had

¹¹⁰ Dhenkanal R&B Circle, Central (R&B) Circle, Bhubaneswar and Keonjhar R&B Circle

constituted (August 2019) a committee called WAMIS Committee¹¹¹ after a delay of five years with the objectives of (i) monitoring the implementation of all modules by all departments; ii) modifications of WAMIS Asset Master as per National Assets Data policy; iii) suggesting improvements to be made in WAMIS and iv) to facilitate integration of WAMIS with e-Procurement and IFMS.

Although the frequency for holding meetings was not specified in the agreement, WAMIS Committee had met only six¹¹² times during the five years period of 2018-2023. This indicated that the WAMIS Committee had met only once a year, which may not be sufficient for achievement of the objectives noted above.

To ensure smooth implementation of WAMIS, the RD Department also established (September 2022) a dedicated monitoring cell and instructed that any deficiencies in the system, should be reported to their designated Nodal Officer for rectification.

However, the Works Department did not take any such similar proactive measures to put in place a system for monitoring of WAMIS. As a result, the deficiencies remained unattended and the objectives of implementation of WAMIS for workflow automation could not be achieved due to lack of monitoring at the department level.

The Works Department, while accepting the fact stated (June 2024) that formation of a monitoring cell to monitor implementation of WAMIS is under active consideration.

4.8.2 Non-maintenance of asset register in WAMIS

Asset module in WAMIS provides for creation of an asset register to maintain details of different assets like roads, bridges and buildings.

Database analysis revealed that there were no records in the asset register of WAMIS in respect of Works Department indicating non-use of the module. The Divisions were manually maintaining the Asset Register at the Division level. Consequently, WAMIS failed to generate a comprehensive report on assets for the Works Department.

However, without developing a comprehensive Asset Management System in WAMIS, the Department implemented (August 2016) a new GIS based

¹¹¹ i) Special Secretary, Electronics and information Technology Department; ii) Representative of Water Resources Department; iii) Representative of Works Department; iv) Representative of Housing and Urban Development Department; v) Representative of Panchayat Raj and Drinking Water Department; vi) Representative of Planning and Coordination Department; vii) Financial Advisor, RD Department; viii) Representative of Commerce and Transport Department; ix) Representative of Finance Department/Director of Treasury Inspection (DTI); x) Representative of Deputy Accountant General (A&E), Puri; xi) Joint Secretary, RD Department; xii) Special Secretary, RD Department and xiii) Project Director (WAMIS), CDAC, Pune

¹¹² 20.05.2019, 17.07.2019, 27.09.2019, 01.10.2020, 22.10.2021 and 22.04.2022

Odisha Road Asset Management System (ORAMS),¹¹³ to prioritise works on technical parameters for the road network and rationalise decision making in the road sector to make the best use of public funds. An expenditure of ₹27.46 crore was incurred between June 2013 and September 2023 for the development and maintenance of ORAMS.

Scrutiny of records in 10 test-checked divisions¹¹⁴ revealed that the road asset details maintained manually by the divisions did not match (*i.e.*, name of the road, numbers and length) with ORAMS as the divisions did not use unique IDs of assets created in ORAMS. Further, out of 10 divisions, six¹¹⁵ did not update the ORAMS after 2016. Thus, non-updation of data periodically by divisions rendered ORAMS data incomplete as it could not depict a real picture of assets for competent authorities to take informed decision on planning and execution of road works. Integration of ORAMS with WAMIS or its inclusion within WAMIS would have facilitated data updates at the division level and ensured a real time picture of assets, but this was not done.

The Works Department stated (June 2024) that training programme on WAMIS will be arranged for the field units. However, the fact remained that in the absence of integration of WAMIS with ORAMS, on every addition/ updation of roads and bridges, the Government had to request the field units to share necessary data in the ORAMS format to update the GIS application instead of using the real time data of WAMIS for the purpose.

4.8.3 Absence of Quality Monitoring module in WAMIS

Quality controls specified in IRC:SP : 112-2017¹¹⁶ have to be referred in conjunction with MoRT&H specifications to ensure satisfactory quality of all roads and bridge works and to see that all quality tests at specified frequencies are being conducted. The SoP for quality control/assurance issued (October 2020) by the MoRT&H required that details of quality tests performed shall be indicated in the bills before releasing payments to the contractor.

There are five Quality Control Divisions under the Works Department *i.e.*, at Cuttack, Berhampur, Rayagada, Keonjhar and Sambalpur. Audit test checked the Quality Control Division, Cuttack and observed the following:

- Though quality tests were conducted during 2018-23, there is no provision to upload the report in WAMIS.

¹¹³ Designed to input/ upload, store, edit, update, view, download the spatial and tubular data on road network and road asset such as carriageway, shoulders, pavement composition, pavement condition and roughness *etc.*, having unique ID for each roads. It was a GIS representation of road network, culverts and bridges on a backdrop of one-line satellite image, topographic maps and information

¹¹⁴ R&B Divisions: i) Angul; ii) Balangir; iii) Bhubaneswar.IV; iv) Dhenkanal; v) Jharsuguda; vi) Keonjhar; vii) Sambalpur.I; viii) Sambalpur II ix) Sonepur and x) Sundargarh

¹¹⁵ R&B Divisions: i) Bhubaneswar No.IV (2015), ii) Jharsuguda (2014), iii) Keonjhar (2014), iv) Sambalpur I (2014), v) Sambalpur II (2014) and vi) Sonepur (2016)

¹¹⁶ Manual of Indian Road Congress (IRC) for quality control in Roads and Bridge Works

- Though defects¹¹⁷ indicating execution of substandard works have been pointed out in 135 cases, action taken reports were not obtained from the divisions concerned, by the Quality Control Divisions.

Further, test check of bills in the sampled divisions revealed that the quality details were not mentioned in the bills to be countersigned by the SEs/EEs before releasing the final bill, indicating poor monitoring of quality control in roads, bridges and building works.

The Works Department while accepting the fact of non-inclusion of quality monitoring module in WAMIS, assured (June 2024) to develop the same.

4.9 Conclusion

The objectives of implementation of various modules of WAMIS remained either partially achieved or unachieved due to absence of training, monitoring and delay in integration of various applications with WAMIS. Non-mapping/incorrect mapping of business rules in the modules of WAMIS even after nine years of implementation necessitated manual interventions resulting in material risks of extension of undue benefits to contractors and errors/misrepresentation of data entered into the system.

Deficiencies in system design, input, validation, processing and output controls coupled with continued manual intervention rendered the available data incomplete and unreliable.

Absence of documented security policy, business continuity plan, disaster recovery plan and DBA logs indicated material risks to information security and sustainable use of the system.

In view of these circumstances, Audit concluded that the responsibility of ensuring compliance with executive instructions related to execution of works, continues to be borne by individual users, instead of being shifted onto WAMIS and hence, the full benefits from implementing the system have not yet been realised.

¹¹⁷ Deficiencies in gradients of BM and SDBC in different road works and non-satisfaction of the concrete cube test for roof slab (Construction of Biju Pattnaik Indoor Stadium at Choudwar), strength of Shyam Steel for 25mm (Construction of Odisha Adarsha Vidyalaya G+1F in the district of Kendrapara), column base M-30 comprehensive strength (Construction of Biju Pattnaik Indoor Stadium at Choudwar), desk slab for minor bridge (M-30) comprehensive strength (Construction of minor bridge over Chandibausamula creek at 7/900 on Rajnagar Dangamala Talchua road in Kendrapara), strength of Shyam Steel for 25mm (Widening and strengthening of Satkutunia Patna road from 38.700 to 54.250km under Ghatagaon R&B Sub Division and pile cap (Construction of OAV core building at Korkora under Raghunathpur block in Jagatasinghpur district)

4.10 Recommendations

Government should ensure:

- 1. Implementation of all the defined and documented modules of WAMIS as identified in functional requirements;**
- 2. Integration of WAMIS with other major applications such as e-Procurement, DMF portal, e-Nirman *etc.*;**
- 3. Mandatory use of all modules by all relevant departments, so that benefits of an automated workflow system could be fully achieved;**
- 4. Inclusion of provisions in the OPWD, CPWA, BIS and IRC Code for mandatory utilisation of WAMIS for all business processes;**
- 5. Development of business continuity plan and disaster recovery plan for the system;**
- 6. Implementation of role-based user access, multi factor authentication and a well-defined password policy;**
- 7. Make provisions in WAMIS for maintenance of Database Administrator (DBA) log;**
- 8. Mapping of business rules with application controls for workflows related to blacklisting of contractors, splitting of works, recovery of advances from contractors, EPC contracts and refund of security deposits; and**
- 9. Implementation of appropriate input/validation controls in the system to prevent incorrect data entries.**